



# Dutch Obstacles to a Comprehensive Approach to Area-Based Groundwater Management

## Introduction

This memorandum has been drawn up as part of the inter-regional NWE IVB project CityChlor for the purpose of identifying Dutch obstacles and putting forward possible problem-solving approaches for an integrated approach to comprehensive area-based groundwater clean-up.

The following reports were used for this memorandum:

- *Samenvattende Handreiking t.b.v. gebiedsgericht beheer verontreinigd grondwater (HGb)* [Summary Guide to Area-Based Management of Contaminated Groundwater];
- National Administrative Consultation Committee on Groundwater (LBOW) - report on the administrative pilot project on groundwater management;
- *Ondersteboven; Voortbouwen op duurzame gronden* [Upside down; Building on sustainable land].

## General

The redevelopment of polluted land and brownfields in urban areas has always been difficult to initiate. It is expensive, very risky and there are diverse interests at play. Brownfields have a negative impact on urban areas, leading to the degeneration of districts and neighbourhoods, on-site cluttering, deterioration of the land and surrounding areas and worsening of the living environment. Although the policy is aimed at inner-city development, preference is often given in practice to the development of new, as yet undeveloped land on the periphery of the urban area that is often cheaper and quicker to achieve than the restructuring of the existing urban area.

A number of factors currently preclude the efficient and effective development of brownfields. These are:

- the complex division of ownership;
- the lack of urgency for the current owner;
- legal thresholds as a result of current legislation;
- the considerable risks and impressions of those involved who aim for 100% decontamination out of fear of the unknown;
- the existing financing model that is based on growth, causing ambitions to become prohibitively expensive if growth fails to materialise or weakens;
- the complex set of issues that are often at play (more than contaminated soil);
- the many parties that have an interest in the present or future situation.

We may conclude that the route taken is a dead end and that we need to find alternative solutions. The new direction, as described here, broadly outlines the concepts using an area-based, comprehensive approach aimed at the joint development of new values by different parties.

It is crucial that we develop other insights on how to deal with contaminated subsoil and the associated risks. It is also important to connect subsoil and top soil in the desired integration of spatial planning.

A healthy return on investment must be possible. In contrast to before, the business model must relate to a longer period. Investments will therefore not only be recouped during development and construction, but particularly from the exploitation of an area. It is not the price of land (with all its equalisations), but value creation during exploitation that will support



business.

### **Pilot project for area-based groundwater management**

Pilot projects for area-based groundwater management were carried out in 2006 and 2007 under the auspices of the Dutch Centre for Soil Quality Management and Knowledge Transfer (Stichting Kennisontwikkeling en Kennisoverdracht Bodem – SKB). These pilot projects were started from a 'soil angle' and focused on large-scale, long-term groundwater decontamination situations. It is clear from these pilot projects that a solution to these problems is only possible through proper coordination between the water sector and soil and soil remediation sectors. An ever-closer interrelationship between these sectors is also evident through the increased use of the subsoil (underground construction) and groundwater (e.g. for underground thermal energy storage or stream remediation). Partly because of this, the management of contaminated groundwater can no longer be viewed separately from developments in spatial planning and layout and from quantitative groundwater management.

Various sectors come together when finding solutions for these type of issues, including those of water, soil, energy, spatial planning, urban development and management, nature and ecology, and drinking water supply. Each of these sectors considers the issue of groundwater management from its own perspective and uses its own terminology. The water sector, for instance, refers to comprehensive groundwater management if there is both quantitative and qualitative management of the groundwater (shallow and deep), as well as in relation to surface water management. The soil sector uses the term 'area-based groundwater management' to refer to the management of contaminated groundwater in an area-based context. The idea of further integration of groundwater management in spatial development processes also lurks behind both concepts. This idea is particularly important for municipalities with complex groundwater issues. After all, they must resolve groundwater issues in conjunction with other management, layout and designated use issues in their municipality.

It is noted that the various concepts and terms in use, such as 'comprehensive' and 'area-based' must also be developed further, partly as a result of legislative developments. This is one of the reasons why the various terms are used next to one another in this report. It is not absolutely necessary for the water, soil and spatial planning sectors to use precisely the same terminology, but it is necessary that they understand each other's language and develop a common conceptual framework which they can use for their cooperation.

The crux of the administrative problem is that there is no overall groundwater manager. Various authorities and groups of authorities have consequently inherited a comprehensive and complex groundwater issue (both quantitative and qualitative, shallow and deep) and do not have the powers and instruments in all respects to resolve this issue entirely on their own.

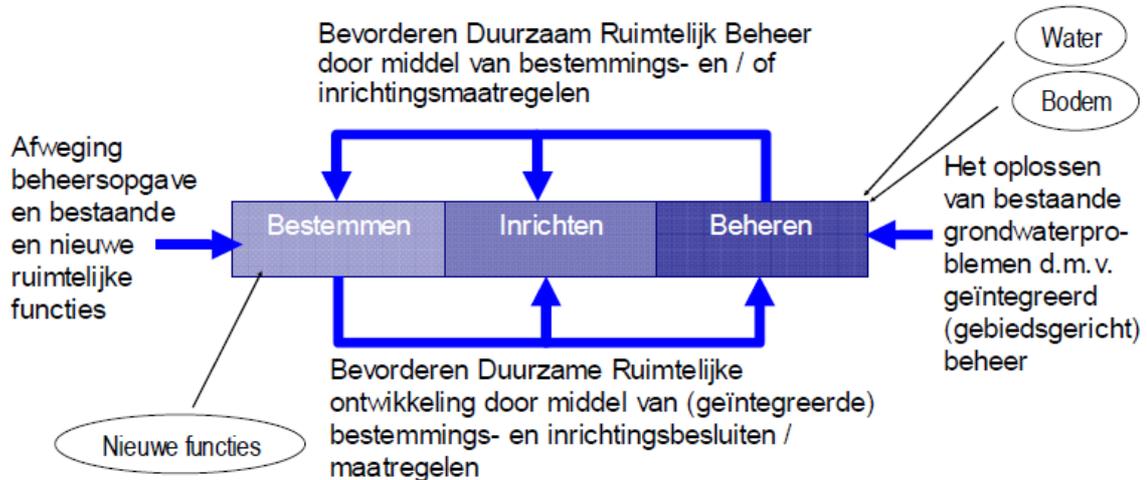
Structural solutions, such as giving specific authorities (e.g. municipalities) more powers and instruments came up for discussion in the pilot projects but are considered inopportune for now by the relevant managers. The solution should rather be sought in administrative cooperation among the competent administrative bodies – in this case the municipality, water board and province – so that the issues can be addressed jointly. It needs to be examined how such 'administrative arrangements' can be structured.

### **Conclusions from the report of the National Administrative Consultation Committee on Groundwater (LBOW)**

- The Committee concludes on the basis of these results that groundwater management can be established for the time being through administrative

arrangements on the basis of existing legislation. Structural solutions in the sense that municipalities are given more powers and statutory instruments, possibly on an optional basis, to independently carry out groundwater management are therefore inopportune at present.

- It is important for groundwater management to become more entrenched in existing and new statutory processes. Forms of planning and instruments such as the Municipal Sewerage Plan (GRP), the municipal and provincial structure visions, water testing and river basin management plans (SGBPs), etc. can be used for this purpose.
- Legislation that is relevant to groundwater management is currently susceptible to considerable change. Various parts have not yet been fully worked out and there are still various unresolved questions present. The ensuing 'lack of clarity' may sometimes slow things down, but on the other hand it also offers scope to integrate comprehensive groundwater management in the new planning processes and structures.
- There is practically no existing experience in structuring administrative arrangements for groundwater management.
- The Committee observes that integrating quantitative and qualitative groundwater management in a spatial perspective will bring together various sectors, including water management, soil remediation, spatial planning, city management, etc. Bridging cultural differences in these areas, both within and among administrative bodies, is not a simple task and requires managerial attention and direction.
- It is important that municipalities, provinces and water boards are enabled by supportive government policy to establish comprehensive groundwater management, as outlined, as part of the spatial development issue.



N.B.1. Onder het “oplossen van problemen” wordt ook verstaan “het creëren van kansen”

N.B. 2. De R.O. processen spelen zich af in zowel het stedelijk gebied (stedelijk leefomgevingsysteem) als in het landelijk gebied (landelijk leefomgevingsysteem)

**Figure 1: analysis framework for examining forms of planning and instruments for area-based groundwater management**

Establishing mutual relationships is important for area-based water management: opportunities and dynamics in the subsoil are created by combining interests. The question is how can and must we designate, organise and manage the subsoil in order to create opportunities and break deadlocks. Can we link up with spatial, waste, energy, soil remediation and soil protection policy within area-based water management (water level and water quantity and quality)? One example is energy generation from waste water for the groundwater level management of residential areas.

### Guide to Area-Based Management

The following obstacles and opportunities were set out in SKB project PP5302: Summary Guide to the Area-Based Management of Contaminated Groundwater (HGb), from which it can be concluded that an area-based approach is desirable or necessary in many cases:

- The fact that the contamination of groundwater in many urban and industrial areas has now become so extensive and complex means that a case-by-case approach to groundwater contamination (so-called 'plumes') is actually no longer possible or cost-effective.
- The fact is that as more time elapses, the weaker the direct relationship becomes between causation/perpetrator on the one hand, and liability for the groundwater contamination and the resultant damage on the other. In many situations, this causal nexus can no longer be fully established and the clean-up of the plume at the perpetrator's expense can no longer be fully enforced, or in some cases even enforced at all.

- The trend of 'from clean-up to management' that was introduced with BEVER (New Policy on Soil Remediation, from multifunctional to functional clean-up, 1993) is now starting to get a grip on contaminated groundwater, partly because the realisation is gradually dawning that groundwater contamination is so extensive that it can no longer be tackled with the help of the current soil policy.
- The need to manage large-scale groundwater contamination is mounting due to ever-increasing stress on the subsoil. This does not only relate to large-scale development, restructuring and revitalisation projects with drainage and underground functions, but also the ever-increasing means of using groundwater for industrial purposes, generating sustainable energy, water level management, etc.
- The risks that may be created by large-scale groundwater contamination for the quality targets of groundwater bodies as defined for the purpose of implementing the EU Water Framework Directive and Groundwater Daughter Directive in the Netherlands.

### **New arrangements**

Value creation, sustainability and the new roles of authorities mean that customised solutions for areas are needed. A business case, used to search for specific value carriers of the location, should be used far more often for area development.

The central questions are:

- Which **social issue** are we actually addressing and what is our position in that regard?
- What are the figures and **assumptions** behind the project? What will happen if we do not do anything?
- What are the expected social and economic costs and income? How can we ensure a healthy **return** on invested capital?
- How does this project contribute towards the strategic **objectives** of the public and private parties concerned?
- Which **risks** will we be running in the project and how can we manage these risks?
- What are the costs, income and risks dependent on, which parties have any influence in this regard and where do they have this influence?

### **Governance**

A network society depends on good cooperation between authorities themselves and between authorities and social/private organisations. This cooperation is necessary for an effective approach to social issues. Good governance requires proper agreements, including with regard to specific results (output), ties and support, measurability and monitoring, necessary input, risks and responsibility, and accountability.

### **Adaptation of the Dutch Soil Protection Act**

The Dutch Soil Protection Act should not make generic quality in each case the main priority, but facilitate the desired function for each area. Risks to humans must be avoided in all situations. In addition, the approach must also guarantee that the function defined for the area becomes possible. The existing quantity of contamination (concentration, load, presence of pure product) is no longer a criterion. It is however important that functions in adjacent areas are not threatened.

### **Financing**

In case of area-based PPPs, an area is defined on the basis of its potential or existing value. This requires a review of classic budget structures and cycles in order to facilitate the



possibility of other financing structures, cooperative ventures and types of contracts. The government acts as the concession grantor in a PPP and, depending on the case, as the joint risk bearer which, like the other interested parties, certainly lays down additional conditions and requirements during rounds of negotiations.

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